



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,522	02/22/2002	Arnold J. Kelly	CHARGED 3.0-015	9960
530 7590 08/13/2007 LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK 600 SOUTH AVENUE WEST WESTFIELD, NJ 07090			EXAMINER MCGRAW, TREVOR EDWIN	
			ART UNIT 3752	PAPER NUMBER
			MAIL DATE 08/13/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/081,522

Applicant(s)

KELLY, ARNOLD J.

Examiner

Trevor McGraw

Art Unit

3752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Allowable Subject Matter***

Prosecution on the merits of this application is reopened on claims 1-42 considered unpatentable for the reasons indicated below:

Upon further consideration of the prior art, Claims 1-8, 10, 13-20, 22-42 now stand rejected under 35 U.S.C. §102 (b) [see rejection below] and Claims 9, 11, 12 and 21 stand rejected under 35 U.S.C. § 103 (a) [see rejection below]. Please also see other items listed below that require further attention from Applicant.

Applicant is advised that the Notice of Allowance mailed 03/21/2005 is vacated. If the issue fee has already been paid, applicant may request a refund or request that the fee be credited to a deposit account. However, applicant may wait until the application is either found allowable or held abandoned. If allowed, upon receipt of a new Notice of Allowance, applicant may request that the previously submitted issue fee be applied. If abandoned, applicant may request refund or credit to a specified Deposit Account.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "41" has been used to designate both "first side" and "electron gun assembly". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being

Art Unit: 3752

amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the initial disperser must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

Art Unit: 3752

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

### ***Specification***

The disclosure is objected to because of the following informalities: In paragraphs 45 and 46, Applicant has used reference character "41" has been used to designate both "electron gun assembly" and "first side". Applicant also reference numbers "44" and "42" to designate "tube" in paragraph 45. It is suggested to Applicant to proofread the entire disclosure thoroughly to ensure the drawings correspond accurate accordingly.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claim 7, it is unclear to Examiner as to the orientation of the membrane first and second sides and the interaction with the electron supply device, as the Claim limitations does not correspond with positioning of the membrane in the drawings. Appropriate correction is required.

Regarding Claim 16, it is unclear to Examiner if Applicant is claiming the "central axis" of the "conduit" or the "central axis" of the apparatus. Appropriate clarification is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 10, 13-20, 22-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Kelly (US 5,093,602).

For the purposes of this office action, as best understood Examiner views the limitations "initial disperser" and "flutes" to be materially the same and have been treated as such in view of the disclosed specification.

In regard to Claim 1, 17 and 36, Kelly (US 5,093,602) teaches an apparatus for dispensing having an initial disperser (30) for breaking a stream of fluent material into

Art Unit: 3752

discontinuous parts so that the discontinuous parts are electrically isolated from a source of fluent material (column 6, lines 58-68; see droplets "72" isolated from liquid source "31" in Figure 1). An electron supply device (54) is arranged so as to provide free electrons to the discontinuous parts after said discontinuous parts are formed by the initial disperser and impart a net charge on the discontinuous parts of the fluent material so that the discontinuous parts of the fluent material are dispersed at least partially under the influence of the net charge (column 5, lines 48-56, column 6, lines 6-17; see also Figure 1 where fluent material (liquid) is pumped into the conduit "26" past the initial disperser "30" and is charged after passing the initial disperser "30" for atomization) from a fluid source (31).

In regard to Claims 2-4, 8, 15, 17, 18 and 37-38 Kelly teaches where the initial disperser (30) has a body (14,12) having surface profiling and a chamber (22; see surface profiling in Figure 1 near the orifice "24" and chamber "22" with first and second ends), which define a conduit (26) for carrying and disrupting the stream of fluent material where the body (14,12) terminates at and helps to define an orifice (24) so that the discontinuous parts of the fluent material are produced at the orifice (24). The surface profiling of the body (14,12) also includes a plurality of elongate flutes (30) that project into the conduit (26). Furthermore, the conduit (26) having an inlet is in fluid communication with a source of fluent material (31) comprising a tank (see "31" in Figure 1) that is capable of delivering fluent material to the conduit inlet (28) at a pressure between 5 and 15 bar via the pump connected to the tank (31; see pump in Figure 1).

Art Unit: 3752

In regard to Claims 5 and 6, Kelly also teaches where the electron supply device (54) is aligned with the orifice (24) and the conduit (26) is cylindrical in shape to project the fluent material in a stream around the central axis (18) towards the orifice (24; column 6, lines 6-14).

In regard to Claims 7, 10, 13 and 40-41, Kelly teaches where the electron supply device (54) has an electron permeable membrane having a first side (first side of "40") facing the orifice (24) and a second side facing opposite from the first side and the electron supply device (54) is arranged on the central axis (18) to provide free electrons at the second side so that the electrons pass through the membrane (40) to the first side and are directed at the discontinuous parts of the fluent material at the orifice (24; see Figure 1) where a vacuum pump (48) is connected to the chamber (22) for decreasing pressure within the chamber (22).

In regard to Claims 19 and 20, the apparatus of Kelly additionally teaches where the body (14,12) has a first cylindrical part having a first surface (Inner portion of "14"; see Figure 1) and a second cylindrical part with a second surface (outer portion of "12"; See Figure 1) where the first cylindrical part is received in the second cylindrical part so that the first surface and second surface cooperate to define the conduit (26; see slanted surface on "12" and "14" that "30" is disposed upon which defines the conduit "26") where the surface profiling is disposed on the first surface of the first cylindrical part (14; see Figure 1 for curved surface profiling at the end of "26" opening into the orifice "24").



Kelly further teaches where a power source (60) is connected to power the electron supply device (54) and a conductive grid is capable of being disposed adjacent the first side of the membrane (40; column 5, lines 6-11).

Regarding method claims 22-35, the device shown by Kelly will perform the methods as recited in claims 22-35, during normal operational use of the device, the method of making or using the device is inherent in using the apparatus (column 5, line 62-column 6, line 5; column 9, lines 1-17; Water is capable of being the effluent material to be dispersed)

In regard to Claim 39, Kelly teaches the chamber having a pressure of between 1 kilopascal and 80 kilopascal (column 9, lines 1-17).

In regard to Claim 42, Kelly teaches where the chamber is defined by a surface of the body (14,12) where the surface is comprised of an insulating material (column 7, lines 5-8).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 11, 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly (US 5,093,602) in view of Kelly (US 4,991,774).

In regard to Claim 9 and 21, Kelly (5,093,602) fails to teach where the conductive grid as described and taught above is directly connected to a second power supply to

apply an electrical potential to the conductive grid for enhancing the penetration of electrons to the orifice. However, Kelly (4,991,774) teaches where a second power supply is used in conjunction with a porous member. It would have been obvious to one having ordinary skill in the art at the time the present invention was made to provide the conductive grid of Kelly (5,093,602) with the second power supply of Kelly (4,991,774) to provide an additional charging mechanism for accelerating electrons.

In regard to Claim 11, Kelly (5,093,602) fails to teach where an emitter comprises a ½ millimeter diameter carbon steel needle. It would have been an obvious matter of design choice to configure the emitter of Kelly as a ½ millimeter diameter carbon steel needle, since Applicant has not disclosed that embodying the emitter as ½ millimeter diameter carbon steel needle solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the emitter being embodied with smaller or larger diameters.

In regard to Claim 12, Kelly (5,093,602) as taught and described above fails to teach where the tip of the emitter is disposed in the chamber. On the other hand, Kelly (4,991,774) teaches where the tip of the emitter is disposed in the chamber. It would have been obvious to one having ordinary skill in that art at the time the present invention was made to have provided the chamber of Kelly (5,093,602) with the longer emitter whose tip extends into the chamber so that the distance of electron acceleration to the orifice is shortened.

All of the claimed elements were known in the prior art and one skilled in that art could have combined the elements as claimed by known methods with no change in

Art Unit: 3752

their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-42 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 5,093,602 in view of US Patent No. 4, 991,774. The claims of the present invention overlap in scope with patent No. 5,093,602 but lack a conductive grid connected to a power supply. The Kelly (5,093,602) fails to teach where the conductive grid as described and taught above is directly connected to a second power supply to apply an electrical potential to the conductive grid for enhancing the penetration of electrons to the orifice. However, Kelly

Art Unit: 3752

(4,991,774) teaches where a second power supply is used in conjunction with a porous member. It would have been obvious to one having ordinary skill in the art at the time the present invention was made to provide the conductive grid of Kelly (5,093,602) with the second power supply of Kelly (4,991,774) to provide an additional charging mechanism for accelerating electrons.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dorman (US 3,561,253), Ahn et al. (US PG PUB 2002/0158140), DeFreitas (US 5,588,299), Kelly (US 5,378,957).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trevor McGraw whose telephone number is (571) 272-7375. The examiner can normally be reached on Monday-Friday (2nd & 4th Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Shaver can be reached on (571) 272-4720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3752

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Trevor McGraw  
Art Unit 3752

TEM



KEVIN SHAVER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700